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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:

Isao TAKASU et al.

: Group Art Unit: 1755

Application No.: 10/089,302

: EXAMINER: Hailey, PATRICIAL

Filed: March 29, 2002

:

FOR: CTALYST FOR DECOMPOSING

:

ORGANIC HARMFUL

SUBSTANCES AND METHOD FOR :

DECOMPOSING ORGANIC :

HALIDES BY USE THEREOF :

DECLARATION UNDER 37 CFR 1.132

Honorable Commissioner of Patents and Trademarks  
Washington, D.C. 20231

Sir:

I, Nobuhiko HORIUCHI, declare and state that:

1. I am citizen of Japan, and residing at 2-4-1, Yushudai-nishi, Ichihara city, Chiba, Japan.

In March, 1986, I was graduated from Kyushu University, Faculty of Engineering, Department of Applied Chemistry, and received a degree of Bachelor of Engineering from Kyushu University. In March, 1988, I was graduated from the graduated course of Kyushu University, majoring in Material Science and Technology, and received a degree of Master of engineering from Kyushu University.

In April, 1988, I had been an employee of Mitsui Toatsu Chemicals Inc. I had been assigned to Central Research Laboratory of the above company from April 1988 to November 1990, I had been assigned to Catalysts and Chemicals inc. Far East, from December to July 1994. I had been assigned to Central Laboratory of Mitsui Toatsu Chemicals Inc. from August 1994 from September 1997.

In October 1997, I had been an employee of Mitsui Chemicals Inc. I had been assigned to Petrochemicals Laboratory of the above company from October 1997 to June 1999. I had been assigned to Material Science Laboratory of the above company from July 1999 to March 2002. Till the present time, I have been assigned to Catalysis Science Laboratory of the above company, Heterogeneous Catalysis Group from April 2002.

2. I am a chief researcher for further development of the invention described in the specification of the above-identified application.

3. The following Experiments were carried out in order to clarify the difference between the catalyst of the present invention and that according to USP 4,225,462:

i. Preparation of Catalysts

Catalyst A according to the invention

An aqueous solution of vanadyl sulfate was obtained by dissolving 6.6 g of vanadyl sulfate (purity: 72%) in 21 g of water. As a reinforcing agent, 3.1 g of glass fibers were dispersed in the aqueous solution to prepare Solution A. Separately, 34.2 g of the anatase-type of titanium dioxide, 17.3 g of barium sulfate and 7.7 g of acidic clay as a molding additive were introduced into a kneader having an internal volume of 50 ml and mixed by simultaneously adding Solution A. The mixture was then kneaded by further adding 0.56 g of methylcellulose and 0.28 g of polyethylene oxide as an organic additive and extruded and molded by a extruder into pellets of 3 mm diameter and 10mm length. The pellet-shaped catalyst was dried at 90 °C, for 3 hours and then sintered at 430 °C, for 6 hours. As a result, Catalyst A was obtained, which contained 83 wt. % of the catalyst component composed of 9 wt. % of water-insoluble vanadyl sulfate ( $\beta$ -VOSO<sub>4</sub>), 59 wt. % of titanium dioxide and 32 wt. % of barium sulfate; 12 wt. % of the molding additives; and 5 wt. % of the reinforcing agent.

Catalyst B as reference according to USP 4,225,462

Catalyst B was obtained in the same manner as the process for Catalyst A excepted that the anatase-type of titanium dioxide was not added. Catalyst B contained 83 wt. % of the catalyst component composed of 7.5 wt. % of water-insoluble vanadyl sulfate ( $\beta$ -VOSO<sub>4</sub>) and 92.5 wt. % of barium sulfate; 12 wt. % of the molding additives; and 5 wt. % of the reinforcing agent.

ii. MCB decomposing test

Example of the present invention

A glass-made reactor of 17mm diameter was filled by 22 ml of Catalyst A. A model gas composed of 10 vol. % of oxygen and 90 vol. % of nitrogen, which further contained 15 ppm of MCB, monochlorobenzene, was introduced into the reactor and exhausted gas was discharged to carry out the decomposition reaction at  $6,800 \text{ hr}^{-1}$  of the specific velocity, at 200 °C for 5 hours. The MCB decomposition rate after 5 hour thus obtained is shown in TABLE 1. The decomposition rate was calculated according to the equation : ((MCB concentration at the outlet/MCB concentration at the inlet)  $\times$  100).

Reference Example

The same test as above was carried except that Catalyst B was used for Catalyst A, and the MCB decomposition rate thus obtained is also shown in TABLE 1.

TABLE 1

	Catalyst	Reaction Temperature (°C)	MCB Decomposition rate (%)
Example	A	200	87.6
Reference Example	B	200	26.2



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I her by declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that wilful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such wilful false statements may jeopardized the validity of the above application or any patent issued thereon.

October 8, 2003

(Date)

Nobuhiko Horiochi

Nobuhiko HORIUCHI